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(54) Title: REPELLENT PREPARATIONS

(57) Abstract: A preparation for repelling living organisms which comprises in combination, capsaicin and a natural or synthetic wax such as wool wax or lanolin. The preparation may be combined with a solvent or other emulsifying agent for use as a coating or for pressure treating of timber. A particular application of the coating is as a marine growth inhibiter. The preparation alternatively may be used as an additive for paints or plastics.

WO 2005/027642 A1

REPELLENT PREPARATIONS

Technical Field

This invention relates to repellent preparations and in particular to preparations for use in repelling living organisms including marine organisms. The invention also relates to preparations which are suitable for use as preservatives.

Background Art

Timbers particularly timbers exposed to harsh environmental conditions are usually treated to resist attach by wood eating organisms. A common method of preserving timbers to prevent attack is to impregnate the timbers in an arsenic compound in a vacuum application process. Whilst arsenic impregnated timbers have good resistance to attack, the use of arsenic as a preservative is not environmentally acceptable. Further a particular difficulty is encountered when it is necessary to dispose of arsenic treated timbers.

Hulls of marine craft are usually treated with an antifouling paint which is often copper based. Paints of this type are also not environmentally acceptable in that they are usually sacrificial and tend to pollute the waterways in which the marine craft is operating.

There is thus a necessity for a method and means for treating timbers as well in hulls of marine craft in a manner which will resist attack by living organisms and which is environmentally friendly. It would be desirable to use a product which is naturally occurring.

Historically, it has been found that extracts of the capsicum plant which primarily constitute capsaicin (8-methly-N-vainllyl-noneamide) have a number of beneficial properties, one property being as a repellent for insects such as termites in a wood coating or impregnation application and as a marine organism repellent in a marine coating applications. Various means have been proposed for extracting capsaicin for use in this application such as that disclosed in US patent No. 6,465,022 in which a method of providing an essential oil extract of capsicum from capsicum plants is described.

Various applications of capsaicin have also been disclosed in the prior art. For example, US patent No. 5,985.010 discloses an animal repellent comprising a mixture of capsicum and a liquid organic solvent which are bonded or cross-linked with polymeric substance. The repellent disclosed in this documents is primarily used as a

rodent repellent. US patent No. 6,523,298 discloses a capsicum-based pesticide which comprises an aqueous formulation containing capsicum.

Whilst the compositions of the prior art are suitable for limited applications, they are not particularly suited for effective wood or fastener preservation applications or for application as anti-fouling in a marine environment.

Summary of the Invention

The present invention aims to provide preparations which have improved repellant properties as compared to preparations of the prior art or which at least provide an alternative to the preparations of the prior art. In particular, the present invention aims to provide repellent preparations which are particularly suitable for use in waterproofing, water-resisting and preserving applications particularly of timber and fasteners. The present invention in a further aspect aims to provide preparations which are particularly suitable for use as a marine anti-fouling. Other objects and advantages of the invention will become apparent from the following description.

The present invention thus provides in one aspect a preparation for repelling living organisms said preparation comprising in combination capsaicin and a natural or synthetic wax. The term living organisms as used herein includes animals such as rodents, including mice and rats, insects such as termites, wood borers, ants, spiders and other pests, as well as marine organisms including borers, barnacles and shell fish.

Preferably, the preparation contains the following:

Capsaicin present in 1 to 50% by volume of capsicum oleoresin

Natural or Synthetic wax 5 to 90% by volume

A natural wax for use in the preparation may be selected from a wax from a plant or animal source, a mineral wax or a wax derived form a natural occurring substance or liquid. Typical natural waxes derived from plants or animals comprise wool wax or lanolin, bees wax, or carnauba wax. A typical mineral wax comprises montan wax derived from lignite. A wax derived from a naturally occurring substance comprises paraffin wax which is a by-product of petroleum. The natural wax may comprise one or a combination of two or more of the above natural waxes

A synthetic wax for use in the preparation may comprise a wax produced primarily from ethylene. Such waxes include polyethylene wax, polypropylene wax, and tetrafluoroethylene wax. The synthetic wax of the preparation may comprise one or a combination of two or more of the above synthetic waxes

So that the preparation is in a suitable form for application, the preparation suitably also includes a solvent. Alternatively or additionally, the preparation may include other forms of emulsifying agent. A preparation of this form is particularly suited to pressure treating of timber.

The preparation may also include natural oils including vegetable oils. The preparation preferably also includes a fungicide. The preparation may further include a fragrance.

The wax/capsaicin ratio in the preparation is typically 10 to 20 to 1 by volume. This however may be varied depending upon the repellent properties required of the preparation and/or the waterproofing/preserving properties required of the product

In a further aspect, the repellent preparation of the invention is used as an additive. The preparation is suitably used as an additive for paints or plastics to act as a repellent for mice, rats, rodents or other vermin.

In yet a further aspect, the present invention provides a method for preserving timber, said method including the step of applying to said timber a preserving preparation, said preparation comprising in combination capsaicin and a natural or synthetic wax.

In yet a further aspect, the preparation comprises a preparation for inhibiting marine growth.

In yet a further aspect the present invention provides a method for inhibiting marine growth on a surface exposed to a marine environment, said method including the step of applying to said surface, a marine growth inhibiting composition, said composition comprising in combination capsaicin and a natural or synthetic wax.

Detailed Description of the Preferred Embodiments

In accordance with a preferred embodiment of the invention, a repellent preparation contains capsaicin and lanolin. Whilst reference in the embodiments described below is made to lanolin, lanolin may be substituted by other waxes or wax-like material having similar water resistant and adhering properties.

Capsaicin for use in the preparation is extracted from capsaicinoids contained in Habanero peppers which have comparatively elevated capsaicinoid content. The capsaicin however may be extracted from any other pepper or capsicum species. Capsaicin for use in the preparation is provided in capsicum oleoresin. Capsicum oleoresin may either be used in the preparation to provide the required capsaicin

content in a liquid form or a powder or granular form.

Preferably, the preparation comprises a combination of the following:

Capsicum Oleoresin (containing capsaicin)	1 to 50% by volume
Lanolin	5 to 90% by volume

Lanolin as used in the preparation is also known as wool fat or grease. Lanolin however may be present in the preparation in the form of any lanolin-based product. For effective blending with capsaicin, however, the lanolin is liquefied.

The preparation may be prepared by any suitable combining method including heating, blending and homogenizing processes. It has been found that the combination of lanolin and capsaicin act in synergy to provide a preparation which has the beneficial repellent properties of capsaicin and the beneficial adhering, protecting and water proofing properties of lanolin. Such properties make the preparation suited to a wide range of applications.

For application as a coating or preservative, the preparation also includes a solvent. The solvent is present in the preparation in 5 to 90 % by volume. Alternatively or additionally, the preparation may include other forms of emulsifying agent.

A preparation for pressure treating of timber comprises :-

Capsaicin	1% to 5% by volume
Lanolin	10% to 30% by volume
Solvent	50% to 90% by volume

In a particularly preferred form the preparation comprises:-

Capsaicin	1% to 2% by volume
Lanolin	15% to 25% by volume
Solvent	60% to 80% by volume

In the above preparations capsaicin is present in capsicum oleoresin in liquid or powdered form.

When used in an application as a preservative for timber, the beneficial properties of the preparation provided by the capsaicin serve to repel termites, rodents, insects, spiders and the like whilst the beneficial properties of the lanolin serve as a waterproofing or water-resisting and preserving agent for the timber.

For timber preservation, the preparation can be vacuum impregnated into the timber in a conventional manner by exposing the timber to a vacuum and applying the

preparation to the timber whilst under vacuum for a sufficient time for the preparation to penetrate the timber.

As an alternative, the preparation can be applied by any other suitable method known in the art. For example, the preparation may be applied to timber by spraying, wiping, rolling brushing or soaking.

The above preparation and method is also suitable for application to fasteners particularly fasteners subject to corrosion or other attack.

The preparation may also include natural oils including vegetable oils which when used are present in the preparation in 5 to 90 % by volume.

The preparation may also include a fungicide. The fungicide where used is present in the preparation in 1% to 80% by volume. In one preparation, the fungicide comprises Tea Tree Oil. Where Tea Tree Oil is used as a fungicide, it is present in 1% to 30% by volume. In another preparation, the fungicide comprises methylated spirits, typically Industrial Methylated spirits present in the preparation in 1 to 80% by volume. The fungicide may comprise a combination of Tea Tree Oil and methylated spirits or any other fungicide or combinations thereof.

The preparation may further include a fragrance. The fragrance which may be lavender or any other fragrance when used is present in the preparation in 1% to 20% by volume.

In a preferred embodiment where the preparation is required for use as a coating, the preparation comprises: -

Capsaicin	1% to 5% by volume
Lanolin	10% to 30% by volume
Canola Oil	5% to 15% by volume
Industrial Methylated spirits	1% to 2% by volume
Tea Tree Oil	1% to 2% by volume
Solvent	50% to 90% by volume

A particularly preferred preparation for this purpose has:

Capsaicin	approximately 1 % by volume
Lanolin	approximately 20% by volume
Canola Oil	approximately 10% by volume
Industrial Methylated spirits	approximately 0.5% by volume
Tea Tree Oil	approximately 0.5% by volume

Solvent approximately 68% by volume

Capsaicin in the above preparations is provided in capsicum oleoresin in liquid form.

The preparation of the invention also has particularly beneficial application as a marine growth inhibiter which therefore makes it particularly effective as an anti-fouling for the hulls of boats. In such an application, the beneficial properties provided by the capsaicin serve as a repellent to marine organisms whilst the beneficial properties of lanolin contained within the preparation serve both as a marine growth inhibiter and as a waterproofing or water-resisting agent for the hull. In its application as a marine growth inhibiter, the preparation comprises capsaicin present in the preparation in 1% to 50% by volume of capsicum oleoresin and the lanolin is present in the preparation in 5% to 90% by volume with or without the additional additives referred to above.

In the case where the preparation is to be used in marine applications for example as a marine anti-fouling on the hulls of boats, the preparation is normally applied by spraying, wiping rolling or brushing.

In a further application, the preparation referred to above is used as an additive, the preparation comprising 1% to 50% by volume of capsicum oleoresin containing capsaicin and 5% to 90% by volume of lanolin. The additive is simply added to paint for application as a coating in a known manner, the coating thus having enhanced waterproofing properties due to its inclusion of lanolin and the coating having repellent properties due to its inclusion of capsaicin.

The preparation of the present invention due to its primary effective components being naturally occurring components is environmentally friendly product with its capsaicin content making it particularly effective as a repellent for termites, rodents, insects, spiders and other living organisms and its lanolin content making it particularly effective as a waterproofing and preserving agent for timber and fastenings.

The terms "comprising" or "comprises" as used throughout the specification and claims are taken to specify the presence of the stated features, integers and components referred to but not preclude the presence or addition of one or more other feature/s, integer/s, component/s or group thereof.

Whilst the above has been given by way of illustrative embodiment of the invention, all such variations and modifications thereto as would be apparent to persons

skilled in the art are deemed to fall within the broad scope and ambit of the invention as herein defined in the appended claims.

Claims

1. A preparation for repelling living organisms said preparation comprising in combination capsaicin and a natural or synthetic wax.

2. The preparation of claim 1 wherein said natural wax comprises a wax from a plant or animal source, a mineral wax or a wax derived form a natural occurring substance or liquid.

3. The preparation of claim 2 wherein said natural wax is selected from one or more of lanolin, bees wax, carnauba wax, montan wax or paraffin wax.

4. The preparation of claim 1 wherein said synthetic wax comprises an ethylene based wax.

5. The preparation of claim 4 wherein said synthetic wax is selected from one or more of polyethylene wax, polypropylene wax, and tetrafluoroethylene wax.

6. The preparation of claim 1 wherein said preparation comprises a combination of 1% to 50% by volume of capsicum oleo resin containing capsaicin and 5% to 90% by volume of natural or synthetic wax.

7. The preparation of claim 1 wherein said preparation includes a solvent or other emulsifying agent.

8. The preparation of claim 1 wherein said preparation includes one or more of a natural oil including a vegetable oil, a fungicide and a fragrance.

9. The preparation of any one of claims 1 to 6 and comprising an additive for paints or plastics.

10. The preparation of any one of claims 1 to 8 and comprising a marine growth inhibiting composition.

11. A method for preserving timber, said method including the step of applying to said timber a preserving preparation, said preparation comprising in combination capsaicin and a natural or synthetic wax.

12. A method for inhibiting marine growth on a surface exposed to a marine environment, said method including the step of applying to said surface, a marine growth inhibiting composition, said composition comprising capsaicin and a natural or synthetic wax.

13. A repellent preparation comprises in combination capsaicin and lanolin.

14. A repellent preparation as claimed in claim 13 wherein said capsaicin is extracted from capsaicinoids contained in Habanero peppers.

15. A repellent preparation as claimed in claim 13 and comprising 1 to 50% by volume of capsicum oleoresin containing capsaicin and 5 to 90% by volume of lanolin.

16. A repellent preparation as claimed in claim 15 and including 5 to 90 % by volume of a solvent.

17. A repellent preparation as claimed in claim 16 and comprising :-

Capsicum oleo resin containing capsaicin	1% to 5% by volume
Lanolin	10% to 30% by volume
Solvent	50% to 90% by volume

18. A repellent preparation as claimed in claim 17 and comprising:-

Capsicum oleo resin containing capsaicin	1% to 2% by volume
Lanolin	15% to 25% by volume
Solvent	60% to 80% by volume

19. A method for preserving timber, said method including the step of applying to said timber a preserving preparation, said preparation comprising capsaicin and lanolin.

20. A method as claimed in claim 19 wherein said capsaicin is present in the preparation in 1% to 50% by volume of capsicum oleoresin and the lanolin is present in the preparation in 5% to 90% by volume.

21. A preparation as claimed in claim 17 or 18 and a natural oil or oils present in the preparation in 5 to 90 % by volume.

22. A preparation as claimed in claimed in claim 17 or claim 18 and including a fungicide present in the preparation in 1% to 80% by volume.

23. A preparation as claimed in claim 22 where said fungicide comprises Tea Tree Oil and/or methylated spirits.

24. A preparation as claimed in claim 17 or claim 18 and including a fragrance present in the preparation in 1% to 20% by volume.

25. A repellent preparation for use as a coating comprising: -

Capsaicin	1% to 5% by volume
Lanolin	10% to 30% by volume
Canola Oil	5% to 15% by volume
Industrial Methylated spirits	1% to 2% by volume
Tea Tree Oil	1% to 2% by volume
Solvent	50% to 90% by volume

26. A repellent preparation as claimed in claim 25 and comprising:

Capsaicin	approximately 1 % by volume
Lanolin	approximately 20% by volume
Canola Oil	approximately 10% by volume
Industrial Methylated spirits	approximately 0.5% by volume
Tea Tree Oil	approximately 0.5% by volume
Solvent	approximately 68% by volume

27. A repellent preparation as claimed in claim 25 or claim 26 wherein said capsaicin is present in capsicum oleoresin.

28. A repellent preparation for use as an additive comprising 1% to 50% by volume of capsicum oleoresin containing capsaicin and 5% to 90% by volume of lanolin.

29. A repellent preparation for use in pressure treating timber comprising 1% to 5% by volume of capsaicin, 10% to 30% by volume of lanolin and 50% to 90% by volume of a solvent.

30. A marine growth inhibiter comprises 1% to 50% by volume capsaicin and 5% to 90% lanolin.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2004/001306

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. [7]: A01N 65/00, 25/10; C09D 5/14, 5/16; B27K 3/36, 3/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A01N 65/00, 25/10; C09D 5/14, 5/16, 191/06, 191/08; B27K 3/08, 3/12, 3/34, 3/36, 3/38,

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
DERWENT: WPAT & JAPIO; key words: capsaicin, capsicum, pepper, wax, timber, wood, repel, preserve, coat

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 5466459 A (WILSON) 14 November 1995 col. 3, lines 65-67; Tables I, II, IV; col. 9, lines 15-24; claims	1-9, 21-24 10-20, 25-30
Y	US 5397385 A (WATTS) 14 March 1995 examples; claims	10-12, 19, 20, 29, 30
Y	US 6207290 A (BLUM et al.) 27 March 2001 claims	10-12, 19, 20, 29, 30
Y	GB 187527 A (FRANK DOUGLAS et al.) 26 October 1922 whole document	11, 19, 20,29

[X] Further documents are listed in the continuation of Box C [X] See patent family annex

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5698191 A (WIERSMAN et al.) 16 December 1997 col. 5, lines 49-54; claims	1-9, 21-24
X	US 5891919 A (BLUM et al.) 6 April 1999 col. 3, line 66; example 5; claims	1-9, 21-24
X	Derwent Abstract Accession Number 2003-847054/79, Class C03 D22 F06, and JP 2002-220306 A (NIPPON OIL CO LTD) 9 August 2002 abstract	1-9, 21-24
P, X	Derwent Abstract Accession Number 2004-628893/61, Class A97 C03 D22, and JP 2004-238778 A (TAKEGAWA M) 26 August 2004 abstract	1-9, 21-24
X	GB 1598854 A (FISONS LIMITED) 23 September 1981 whole document	1-9, 21-24
X	FR 2849992 A (INSTITUT PHYTOCEUTIC SOCIETE A RESPONSIBILITE LIMITEE) 23 July 2004 whole document	1-9, 21-24
X	DE 20117011 U1 (PEZKOFER, ADOLF) 7 March 2002 whole document	1-9, 21-24
X	GB 2338186 A (REKITT & COLMAN PRODUCTS LIMITED et al.) 15 December 1999 example 5; claims 1-3	1-9, 21-24
X	Derwent Abstract Accession Number 83-45392K/19, Class A96 D21 E19, and JP 58-055417 A (NITTO ELECTRIC INC KK) 1 April 1983 abstract	1-9, 21-24
X	Derwent Abstract Accession Number 94-142563/17, Class B04, and SU 1794454 A (AS KIRG ORGANIC CHEM INST) 15 February 1993 abstract	1-9, 21-24
X	US 6534078 A (STRZEMIEMSKI et al.) 18 March 2003 claims	1-9, 21-24
X	US 4557934 A (COOPER) 10 December 1985 col. 16, lines 18-20; col. 18, lines 33-47; col. 21, lines 44-63	1-9, 21-24

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/AU2004/001306

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
US	5466459	AU	46487/93	CA	2116237	EP	0600080
		NZ	254436	WO	9400010		
US	5397385	NONE					
US	6207290	AU	34755/99	EP	1070102	WO	9951694
GB	187527	NONE					
US	5698191	NONE					
US	5891919	AU	86035/98	EP	1015418	WO	9915495
GB	1598854	NONE					
FR	2849992	WO	2004064542				
GB	2338186	AU	42747/99	EP	1085860	US	6348502
		WO	9963986	ZA	200100089		
US	6534078	NONE					
US	4557934	AU	29557/84	CA	1223819	EP	0129284
		ES	8608875	JP	60036422	NZ	208597
		PH	20235				
DE	20117011	NONE					

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

END OF ANNEX